OIPE

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                  RAW SEQUENCE LISTING                  DATE: 07/18/2002
                  PATENT APPLICATION:  US/10/006,852    TIME: 11:21:10

                  Input Set : A:\Kinnersley Seq. List.txt
                  Output Set: N:\CRF3\07182002\J006852.raw

     3 <110> APPLICANT: Kinnersley, Alan M.
     4        Turano, Frank J.
     6 <120> TITLE OF INVENTION: Methods for Regulating Plant GABA Production
     8 <130> FILE REFERENCE: 7224-65
C--> 10 <140> CURRENT APPLICATION NUMBER: US/10/006,852
C--> 10 <141> CURRENT FILING DATE: 2002-07-01
    10 <150> PRIOR APPLICATION NUMBER: US 60/246,367
    11 <151> PRIOR FILING DATE: 2000-11-07
    13 <160> NUMBER OF SEQ ID NOS: 24
    15 <170> SOFTWARE: PatentIn version 3.1
    17 <210> SEQ ID NO: 1
    18 <211> LENGTH: 1509
    19 <212> TYPE: DNA
    20 <213> ORGANISM: Arabidopsis thaliana
    22 <220> FEATURE:
    23 <221> NAME/KEY: CDS
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    25 <223> OTHER INFORMATION:
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    31 1               5                   10                  15
    33 aca ttc gca tca cgt tac gtc cgt act tca ctt cct agg ttc aag atg      96
    34 Thr Phe Ala Ser Arg Tyr Val Arg Thr Ser Leu Pro Arg Phe Lys Met
    35                 20                  25                  30
    37 ccg gaa aac tcg att cct aag gaa gcg gcg tat cag atc atc aac gac     144
    38 Pro Glu Asn Ser Ile Pro Lys Glu Ala Ala Tyr Gln Ile Ile Asn Asp
    39         35                  40                  45
    41 gag ctg atg ctt gac ggg aat cca cgg ttg aac tta gcc tcc ttt gtg     192
    42 Glu Leu Met Leu Asp Gly Asn Pro Arg Leu Asn Leu Ala Ser Phe Val
    43     50                  55                  60
    45 acg aca tgg atg gag cct gag tgt gat aaa ctc atc atg tcc tcc atc     240
    46 Thr Thr Trp Met Glu Pro Glu Cys Asp Lys Leu Ile Met Ser Ser Ile
    47 65                  70                  75                  80
    49 aac aag aac tat gtt gac atg gac gag tac ccc gtc acc acc gaa ctt     288
    50 Asn Lys Asn Tyr Val Asp Met Asp Glu Tyr Pro Val Thr Thr Glu Leu
    51                 85                  90                  95
    53 cag aac cga tgt gtg aac atg att gca cat cta ttc aat gca ccg tta     336
    54 Gln Asn Arg Cys Val Asn Met Ile Ala His Leu Phe Asn Ala Pro Leu
    55                 100                 105                 110
    57 gaa gag gcg gag acc gcc gtc gga gta gga acc gtt gga tca tcg gag     384
    58 Glu Glu Ala Glu Thr Ala Val Gly Val Gly Thr Val Gly Ser Ser Glu
    59         115                 120                 125
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61 gcc ata atg ttg gcc ggt ttg gcc ttc aag cgt aaa tgg cag aac aag      432
62 Ala Ile Met Leu Ala Gly Leu Ala Phe Lys Arg Lys Trp Gln Asn Lys
63     130             135             140

65 cgc aaa gct gaa ggc aaa ccc gtc gat aaa ccc aac att gtc acc gga      480
66 Arg Lys Ala Glu Gly Lys Pro Val Asp Lys Pro Asn Ile Val Thr Gly
67 145             150             155             160

69 gcc aat gtt caa gtg tgt tgg gag aaa ttc gct agg tac ttt gag gtt      528
70 Ala Asn Val Gln Val Cys Trp Glu Lys Phe Ala Arg Tyr Phe Glu Val
71             165             170             175

73 gaa ctt aag gaa gtg aaa ttg agt gaa gga tac tat gtg atg gac cct      576
74 Glu Leu Lys Glu Val Lys Leu Ser Glu Gly Tyr Tyr Val Met Asp Pro
75         180             185             190

77 caa caa gct gtt gat atg gtt gat gag aac acc att tgt gtt gcg gac      624
78 Gln Gln Ala Val Asp Met Val Asp Glu Asn Thr Ile Cys Val Ala Asp
79         195             200             205

81 att ctt ggt tcc act ctt aat gga gaa ttc gaa gat gtt aaa ctc ttg      672
82 Ile Leu Gly Ser Thr Leu Asn Gly Glu Phe Glu Asp Val Lys Leu Leu
83     210             215             220

85 aac gat ctc ttg gtc gaa aag aac aaa gaa acc gga tgg gat aca cca      720
86 Asn Asp Leu Leu Val Glu Lys Asn Lys Glu Thr Gly Trp Asp Thr Pro
87 225             230             235             240

89 atc cac gtg gat gcg gca agt gga gga ttc att gca ccg ttt ttg tat      768
90 Ile His Val Asp Ala Ala Ser Gly Gly Phe Ile Ala Pro Phe Leu Tyr
91             245             250             255

93 ccg gaa ttg gaa tgg gac ttt aga ctt ccc ttg gtg aag agt atc aat      816
94 Pro Glu Leu Glu Trp Asp Phe Arg Leu Pro Leu Val Lys Ser Ile Asn
95         260             265             270

97 gtg agt ggt cac aag tat gga ctt gtg tac gca gga att ggt tgg gta      864
98 Val Ser Gly His Lys Tyr Gly Leu Val Tyr Ala Gly Ile Gly Trp Val
99     275             280             285

101 atc tgg aga aac aaa gag gat ttg cct gag gaa ctc atc ttc cat atc     912
102 Ile Trp Arg Asn Lys Glu Asp Leu Pro Glu Glu Leu Ile Phe His Ile
103 290             295             300

105 aat tat ctt ggt gct gac caa ccc acc ttt act ctc aat ttc tcc aaa     960
106 Asn Tyr Leu Gly Ala Asp Gln Pro Thr Phe Thr Leu Asn Phe Ser Lys
107 305             310             315             320

109 ggt tca agt caa gtc att gct caa tac tac caa ctt atc cga ttg ggc    1008
110 Gly Ser Ser Gln Val Ile Ala Gln Tyr Tyr Gln Leu Ile Arg Leu Gly
111             325             330             335

113 cac gag ggt tac aga aat gtg atg gag aat tgc aga gag aat atg atc    1056
114 His Glu Gly Tyr Arg Asn Val Met Glu Asn Cys Arg Glu Asn Met Ile
115         340             345             350

117 gtc cta agg gaa gga ctt gag aag aca gaa agg ttc aac atc gtc tca    1104
118 Val Leu Arg Glu Gly Leu Glu Lys Thr Glu Arg Phe Asn Ile Val Ser
119     355             360             365

121 aag gac gag gga gtg cca ctt gtc gct ttc tcc ttg aaa gat agc agc    1152
122 Lys Asp Glu Gly Val Pro Leu Val Ala Phe Ser Leu Lys Asp Ser Ser
123 370             375             380

125 tgt cac act gag ttc gaa atc tcc gac atg ctt cgc agg tat gga tgg    1200
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                    RAW SEQUENCE LISTING                    DATE: 07/18/2002
                    PATENT APPLICATION:  US/10/006,852      TIME: 11:21:10

                    Input Set : A:\Kinnersley Seq. List.txt
                    Output Set: N:\CRF3\07182002\J006852.raw
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126 Cys His Thr Glu Phe Glu Ile Ser Asp Met Leu Arg Arg Tyr Gly Trp
127 385                 390                 395                 400
129 ata gtg ccg gcc tac aca atg cct cca aat gca caa cac atc act gtt      1248
130 Ile Val Pro Ala Tyr Thr Met Pro Pro Asn Ala Gln His Ile Thr Val
131                 405                 410                 415
133 ctt cgt gtg gtt atc aga gaa gat ttc tcg aga aca ctc gct gag aga      1296
134 Leu Arg Val Val Ile Arg Glu Asp Phe Ser Arg Thr Leu Ala Glu Arg
135                 420                 425          .      430
137 ctt gtg atc gat ata gag aaa gtg atg cgt gag ctc gat gag ctt cct      1344
138 Leu Val Ile Asp Ile Glu Lys Val Met Arg Glu Leu Asp Glu Leu Pro
139             435                 440                 445
141 tcg aga gtg att cac aaa ata tca ctt gga caa gag aag agt gaa tct      1392
142 Ser Arg Val Ile His Lys Ile Ser Leu Gly Gln Glu Lys Ser Glu Ser
143     450                 455                 460
145 aac agc gat aac ttg atg gtc acg gtg aag aag agc gat atc gac aag      1440
146 Asn Ser Asp Asn Leu Met Val Thr Val Lys Lys Ser Asp Ile Asp Lys
147 465                 470                 475                 480
149 cag aga gat atc atc act ggc tgg aag aag ttt gtc gcc gac agg aag      1488
150 Gln Arg Asp Ile Ile Thr Gly Trp Lys Lys Phe Val Ala Asp Arg Lys
151                 485                 490                 495
153 aag acg agt ggt atc tgc taa                                          1509
154 Lys Thr Ser Gly Ile Cys
155                 500
158 <210> SEQ ID NO: 2
159 <211> LENGTH: 502
160 <212> TYPE: PRT
161 <213> ORGANISM: Arabidopsis thaliana
163 <400> SEQUENCE: 2
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173 Pro Glu Asn Ser Ile Pro Lys Glu Ala Ala Tyr Gln Ile Ile Asn Asp
174             35                  40                  45
177 Glu Leu Met Leu Asp Gly Asn Pro Arg Leu Asn Leu Ala Ser Phe Val
178     50                  55                  60
181 Thr Thr Trp Met Glu Pro Glu Cys Asp Lys Leu Ile Met Ser Ser Ile
182 65                  70                  75                  80
185 Asn Lys Asn Tyr Val Asp Met Asp Glu Tyr Pro Val Thr Thr Glu Leu
186                 85                  90                  95
189 Gln Asn Arg Cys Val Asn Met Ile Ala His Leu Phe Asn Ala Pro Leu
190             100                 105                 110
193 Glu Glu Ala Glu Thr Ala Val Gly Val Gly Thr Val Gly Ser Ser Glu
194     115                 120                 125
197 Ala Ile Met Leu Ala Gly Leu Ala Phe Lys Arg Lys Trp Gln Asn Lys
198     130                 135                 140
201 Arg Lys Ala Glu Gly Lys Pro Val Asp Lys Pro Asn Ile Val Thr Gly
202 145                 150                 155                 160
205 Ala Asn Val Gln Val Cys Trp Glu Lys Phe Ala Arg Tyr Phe Glu Val
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                    RAW SEQUENCE LISTING                DATE: 07/18/2002
                    PATENT APPLICATION:  US/10/006,852  TIME: 11:21:10

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209 Glu Leu Lys Glu Val Lys Leu Ser Glu Gly Tyr Tyr Val Met Asp Pro
210             180                   185                   190
213 Gln Gln Ala Val Asp Met Val Asp Glu Asn Thr Ile Cys Val Ala Asp
214       195                   200                   205
217 Ile Leu Gly Ser Thr Leu Asn Gly Glu Phe Glu Asp Val Lys Leu Leu
218       210                   215                   220
221 Asn Asp Asn Leu Leu Val Glu Lys Asn Lys Glu Thr Gly Trp Asp Thr Pro
222 225             230                   235                   240
225 Ile His Val Asp Ala Ala Ser Gly Gly Phe Ile Ala Pro Phe Leu Tyr
226             245                   250                   255
229 Pro Glu Leu Glu Trp Asp Phe Arg Leu Pro Leu Val Lys Ser Ile Asn
230             260                   265                   270
233 Val Ser Gly His Lys Tyr Gly Leu Val Tyr Ala Gly Ile Gly Trp Val
234       275                   280                   285
237 Ile Trp Arg Asn Lys Glu Asp Leu Pro Glu Glu Leu Ile Phe His Ile
238       290                   295                   300
241 Asn Tyr Leu Gly Ala Asp Gln Pro Thr Phe Thr Leu Asn Phe Ser Lys
242 305             310                   315                   320
245 Gly Ser Ser Gln Val Ile Ala Gln Tyr Tyr Gln Leu Ile Arg Leu Gly
246             325                   330                   335
249 His Glu Gly Tyr Arg Asn Val Met Glu Asn Cys Arg Glu Asn Met Ile
250       340                   345                   350
253 Val Leu Arg Glu Gly Leu Glu Lys Thr Glu Arg Phe Asn Ile Val Ser
254       355                   360                   365
257 Lys Asp Glu Gly Val Pro Leu Val Ala Phe Ser Lys Asp Ser Ser Lys
258       370                   375                   380
261 Cys His Thr Glu Phe Glu Ile Ser Asp Met Leu Arg Arg Tyr Gly Trp
262 385             390                   395                   400
265 Ile Val Pro Ala Tyr Thr Met Pro Pro Asn Ala Gln His Ile Thr Val
266       405                   410                   415
269 Leu Arg Val Val Ile Arg Glu Asp Phe Ser Arg Thr Leu Ala Glu Arg
270       420                   425                   430
273 Leu Val Ile Asp Ile Glu Lys Val Met Arg Glu Leu Asp Glu Leu Pro
274       435                   440                   445
277 Ser Arg Val Ile His Lys Ile Ser Leu Gly Gln Glu Lys Ser Glu Ser
278 450             455                   460
281 Asn Ser Asp Asn Leu Met Val Thr Val Lys Lys Ser Asp Ile Asp Lys
282 465             470                   475                   480
285 Gln Arg Asp Ile Ile Thr Gly Trp Lys Lys Phe Val Ala Asp Arg Lys
286             485                   490                   495
289 Lys Thr Ser Gly Ile Cys
290             500
293 <210> SEQ ID NO: 3
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295 <212> TYPE: DNA
296 <213> ORGANISM: Arabidopsis thaliana
298 <220> FEATURE:
299 <221> NAME/KEY: CDS
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                    RAW SEQUENCE LISTING              DATE: 07/18/2002
                    PATENT APPLICATION:  US/10/006,852   TIME: 11:21:10

                    Input Set : A:\Kinnersley Seq. List.txt
                    Output Set: N:\CRF3\07182002\J006852.raw

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301 <223> OTHER INFORMATION:
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307                  1               5                  10
309 gtc tgc acc atg ttc gga tct cgc tat gtt cgc act aca ctt ccc aag       100
310 Val Cys Thr Met Phe Gly Ser Arg Tyr Val Arg Thr Thr Leu Pro Lys
311      15              20                  25
313 tat gag att ggt gag aat tcg ata ccg aaa gac gct gca tat cag atc       148
314 Tyr Glu Ile Gly Glu Asn Ser Ile Pro Lys Asp Ala Ala Tyr Gln Ile
315  30               35                  40
317 ata aaa gat gag ctg atg ctt gat ggt aac ccg agg ctt aac cta gct       196
318 Ile Lys Asp Glu Leu Met Leu Asp Gly Asn Pro Arg Leu Asn Leu Ala
319 45               50                  55                  60
321 tcg ttt gtg act aca tgg atg gaa cca gag tgt gac aaa ctc atc atg       244
322 Ser Phe Val Thr Thr Trp Met Glu Pro Glu Cys Asp Lys Leu Ile Met
323              65                  70                  75
325 gac tct atc aac aag aac tac gtt gat atg gat gag tac cct gtc aca       292
326 Asp Ser Ile Asn Lys Asn Tyr Val Asp Met Asp Glu Tyr Pro Val Thr
327          80                  85                  90
329 act gag ctc cag aac cga tgt gta aac att ata gct cga ctg ttc aat       340
330 Thr Glu Leu Gln Asn Arg Cys Val Asn Ile Ile Ala Arg Leu Phe Asn
331          95                  100                 105
333 gcg cca ctc gag gaa tct gag acg gcg gtg gga gta ggg aca gtt ggt       388
334 Ala Pro Leu Glu Glu Ser Glu Thr Ala Val Gly Val Gly Thr Val Gly
335     110                 115                 120
337 tct tca gaa gcc atc atg tta gcc gga ttg gcc ttc aaa aga aaa tgg       436
338 Ser Ser Glu Ala Ile Met Leu Ala Gly Leu Ala Phe Lys Arg Lys Trp
339 125                 130                 135                 140
341 cag aac aaa cgc aag gct gag ggt aaa ccc tat gac aaa ccc aac att      484
342 Gln Asn Lys Arg Lys Ala Glu Gly Lys Pro Tyr Asp Lys Pro Asn Ile
343              145                 150                 155
345 gtc act gga gcc aat gtt caa gtt tgc tgg gag aaa ttc gct cgg tac      532
346 Val Thr Gly Ala Asn Val Gln Val Cys Trp Glu Lys Phe Ala Arg Tyr
347          160                 165                 170
349 ttc gag gtg gag cta aag gga gta aac cta agt gaa ggt tac tac gtg      580
350 Phe Glu Val Glu Leu Lys Gly Val Asn Leu Ser Glu Gly Tyr Tyr Val
351          175                 180                 185
353 atg gat cca gac aaa gca gca gaa atg gta gac gag aac aca atc tgt      628
354 Met Asp Pro Asp Lys Ala Ala Glu Met Val Asp Glu Asn Thr Ile Cys
355          190                 195                 200
357 gtc gca gcc ata ttg gga tcc aca ctc aac ggt gag ttc gaa gac gtg      676
358 Val Ala Ala Ile Leu Gly Ser Thr Leu Asn Gly Glu Phe Glu Asp Val
359 205                 210                 215                 220
361 aaa cgt ctc aat gac ttg cta gtc aag aaa aac gag gag act ggt tgg      724
362 Lys Arg Leu Asn Asp Leu Leu Val Lys Lys Asn Glu Glu Thr Gly Trp
363              225                 230                 235
365 aac aca ccg atc cac gtg gat gca gca agt gga ggg ttc ata gct ccg      772
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VERIFICATION SUMMARY
PATENT APPLICATION: US/10/006,852

DATE: 07/18/2002
TIME: 11:21:11

Input Set : A:\Kinnersley Seq. List.txt
Output Set: N:\CRF3\07182002\J006852.raw

L:10 M:270 C: Current Application Number differs, Replaced Current Application No
L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date